

ASSESSMENT OF SAUDI ORTHODONTISTS AWARENESS OF WHITE SPOT LESIONS AND THEIR MANAGEMENT WITH DIFFERENT REMINERALIZING AGENTS

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Article Received on
20 Nov. 2018,

Revised on 10 Dec. 2018,
Accepted on 31 Dec. 2018

DOI: 10.20959/wjpr20191-13892

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INTRODUCTION

Orthodontics treatment for the alignment of teeth is commonly done procedure especially in the young dental patients. Some treatments are completed in one to one and half years, while some take 2-3 years. The longer the duration of the treatment, the higher are the chances for demineralization of tooth structure especially around the brackets and the development of white spot lesions (WSL). WSLs are more prevalent in orthodontic patients than others (Øgaard B, 1989). About 50% of patients receiving orthodontic treatment develop one or more

WSLs during treatment, compared with 11%–24% of untreated control participants (Gorelick ET AL, 1982). Therefore, it is extremely important that the oral hygiene is maintained throughout the course of fixed orthodontics treatment (Srivastava et al, 2013). Over the years, several materials and techniques have been used to prevent and treat demineralized lesions around brackets after orthodontic treatment. These include several interventions of fluoride and calcium along with other options. The concept of using casein phosphopeptide-amorphous calcium phosphate (CPP-ACP) as a remineralizing agent was introduced in 1998 (Reynolds, 1998). CPP-ACP is used for remineralization of the enamel surface and reduction of decalcification. Various studies have taken place in order to determine the effect of CPP-ACP in the treatment of white spot lesions. A clinical trial revealed that the use of CPP-ACP material was useful in decreasing the activity of streptococcus mutans (Brochner et al, 2010). Another study was conducted in Turkey, which clinical trials with patients being exposed to CPP-ACP for 3 years. It was found out that there was a significant decline in the fluorescence scores among these patients (Karabekiroglu et al, 2016). Since orthodontists play an important role in preventing and treating WSLs which is one of the most common clinical

complications in orthodontic patients and due to the rarity of research about orthodontists' practice in preventing and treating WSLs, this study evaluates Saudi orthodontists' practice toward WSLs in their patients and their knowledge of different remineralizing agents that can be used in their prevention and treatment.

Aims of the study

- To evaluate the awareness of Saudi orthodontics masters residents of WSL
- To evaluate their knowledge of different remineralizing agents that can be used for treatment.

MATERIALS AND METHODS

This is a cross-sectional study which focused on orthodontics program residents in Riyadh, KSA. A closed ended survey was utilized in order to gather information from the people who are aged 25 or more and have experience of less than five years to more than 10 years.

Measuring Instrument

Survey included eight general questions and eight questions about practice with regard to the prevention and treatment of WSL. A total of 89 surveys were filled using convenient sampling. The responses of questions were categorical in nature and the data collected was analyzed using SPSS version 19.

Statistical Analysis

We used descriptive statistics with frequencies being calculated and presented in figures 1, 2, 3. Cross tabulation was also achieved using Chi-square tests to compare the study groups on the basis of gender, age group and years of experience. Value of significance was kept under 0.05.

RESULTS

A total of 89 orthodontists including some orthodontics program residents in Riyadh, KSA filled up the survey, which comprised of 55% (n=47) males and 45% (n=39) females. The sample was divided into subgroups on the basis of age groups, where 61% (n=54) belonged to 25-35 years, 31% (n=28) to 36-45 years, 6% (n=5) to 46-55 years, 2% (n=2) to above 55 years.

The participants were also grouped on the basis of their experience, which demonstrated that 46% (n=41) have less than 5 years of experience, 28% (n=25) have 5-10 years of experience, 26% (n=23) have more than 10 years of experience.

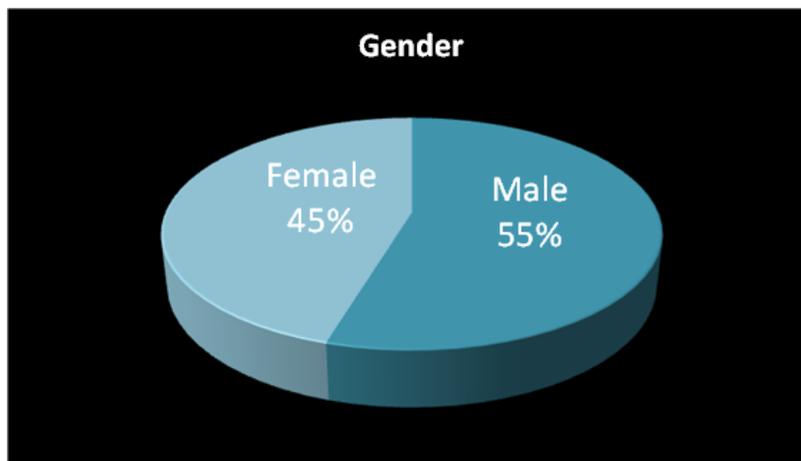


Figure 1: Gender ratio of the study Participants.

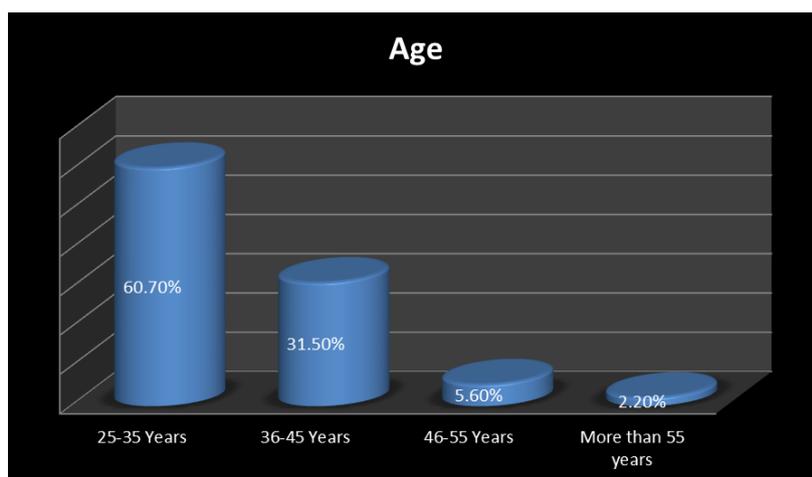


Figure 2: Age group distribution among the study participants.

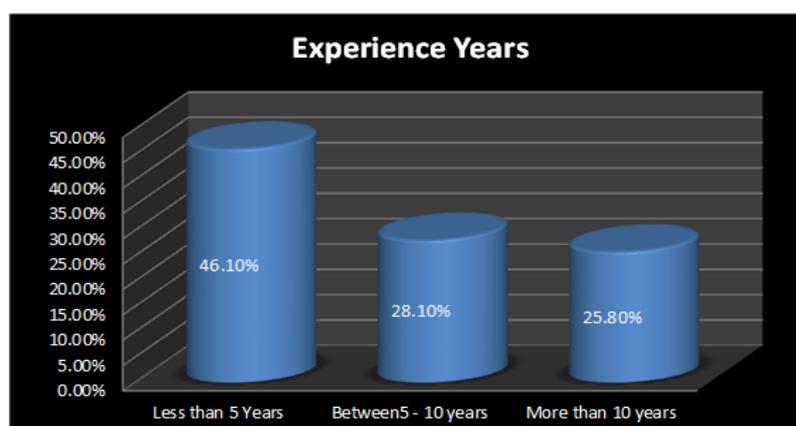


Figure 3: Experience years groups distribution of the study participants.

Table 1: Comparison of responses on the basis of gender.

Item	Male	Female	P-value
Since orthodontists play an important role in preventing and treating WSLs which fixed orthodontic appliance cement do you prefer?	Brackets bonded with glass ionomer : 6% Brackets bonded with resin composite: 94%	Brackets bonded with glass ionomer : 28% brackets bonded with resin composite: 72%	0.016
Do you examine your patient's teeth for dental caries and the presence of white spot lesions (WSLs) at the beginning of the orthodontic treatment ?	Yes: 100%	Yes: 98%	0.523
How often do you check your patient's for WSLs ?	Every visit: 51% Every 3months: 13% Every 6 months: 17% Only at the end of orthodontic treatment: 19%	Every visit: 59% Every 3months: 8% Every 6 months: 10% Only at the end of orthodontic treatment: 23%	0.793
Do you prescribe fluoride products to your patients during their treatment?	Yes: 49%	Yes: 67%	0.039
Have you heard about tooth mousse and tooth mousse plus ?	Yes: 47%	Yes: 41%	0.807
Do you know the indications of using Casein-phosphopeptide amorphous calcium phosphate (CPP- ACP)	Yes: 47%	Yes: 46%	0.039
Do you think CPP-ACP is an effective agent in white spot lesion prevention?	Yes: 38%	Yes: 67%	0.027
Have you recommended CPP-ACP products to your patients ?	Yes: 40%	Yes: 28%	0.495
What is your management of white spot lesions ?	Referral to general practitioners: 40% Home care prescription: 19% Professional fluoride therapy: 26% Using CPP-ACP: 15%	Referral to general practitioners: 36% Home care prescription: 20% Professional fluoride therapy: 28% Using CPP-ACP: 15%	0.890

It can be noted from table 1, that there are no statistically significant comparisons to be found. Majority of the both groups prefer brackets bonded with resin composite. Also many of both groups have not recommended CPP-ACP products to their patients and use CPP-ACP as a management of WSL.

Table 2: Comparison of responses on the basis of age group.

Item	25-35 years	36-45 years	46-55 Years	More than 55 Years	P-value
Since orthodontists play an important role in preventing and treating WSLs which fixed orthodontic appliance cement do you prefer?	Brackets bonded with glass ionomer : 19% Brackets bonded with resin composite: 81%	Brackets bonded with glass ionomer : 11% brackets bonded with resin composite: 89%	Brackets bonded with glass ionomer : 0% Brackets bonded with resin composite: 100%	Brackets bonded with glass ionomer : 50% brackets bonded with resin composite: 50%	0.314
Do you examine your patient's teeth for dental caries and the presence of white spot lesions (WSLs) at the beginning of the orthodontic treatment ?	Yes: 98%	Yes: 100%	Yes: 100%	Yes: 100%	0.884
How often do you check your patient's for WSLs ?	Every visit: 57% Every 3months: 9% Every 6 months: 13% Only at the end of orthodontic treatment: 20%	Every visit: 46% Every 3months: 11% Every 6 months: 18% Only at the end of orthodontic treatment: 25%	Every visit: 40% Every 3months: 20% Every 6 months: 20% Only at the end of orthodontic treatment: 20%	Every visit: 100% Every 3months: 0% Every 6 months: 0% Only at the end of orthodontic treatment: 0%	0.944
Do you prescribe fluoride products to your patients during their treatment?	Yes: 61%	Yes: 43%	Yes: 40%	Yes: 100%	0.206
Have you heard about tooth mousse and tooth mousse plus ?	Yes: 44%	Yes: 43%	Yes: 20%	Yes: 100%	0.291
Do you know the indications of using Casein-phosphopeptide amorphous calcium phosphate (CPP- ACP)	Yes: 48%	Yes: 54%	Yes: 20%	Yes: 0%	0.290
Do you think CPP-ACP is an effective agent in white spot lesion prevention?	Yes: 61%	Yes: 36%	Yes: 0%	Yes: 100%	0.008

Have you recommended CPP-ACP products to your patients ?	Yes: 30%	Yes: 50%	Yes: 20%	Yes: 0%	0.495
What is your management of white spot lesions ?	Referral to general practitioners: 33% Home care prescription: 24% Professional fluoride therapy: 31% Using CPP-ACP: 11%	Referral to general practitioners: 50% Home care prescription: 11% Professional fluoride therapy: 14% Using CPP-ACP: 25%	Referral to general practitioners: 60% Home care prescription: 0% Professional fluoride therapy: 40% Using CPP-ACP: 0%	Referral to general practitioners: 0% Home care prescription: 100% Professional fluoride therapy: 0% Using CPP-ACP: 0%	0.033

We also compared our results on the basis of age group. It can be noted from table 2, that there were no statistically significant comparisons to be found. It is observed that majority prefer brackets bonded with resin composite. Patient's teeth for dental caries and the presence of white spot lesions (WSLs) are examined at the beginning of the orthodontic treatment. However majority of the age group of 25-35 think that CPP-ACP is an effective agent in white spot lesion prevention but the age group of 46-55 years don't agree with it. Also many in all the groups have not recommended CPP-ACP products to their patients and use CPP-ACP as a management of WSL.

Table 3: Comparison of responses on the basis of years of experience.

Item	Less than 5 Years Experience	5-10 years Experience	More than 10 years Experience	P-value
Since orthodontists play an important role in preventing and treating WSLs which fixed orthodontic appliance cement do you prefer?	Brackets bonded with glass ionomer : 24% Brackets bonded with resin composite: 76%	Brackets bonded with glass ionomer : 8% brackets bonded with resin composite: 92%	Brackets bonded with glass ionomer : 9% Brackets bonded with resin composite: 91%	0.116
Do you examine your patient's teeth for dental caries and the presence of white spot lesions (WSLs) at the beginning of the orthodontic treatment ?	Yes: 100%	Yes: 96%	Yes: 100%	0.274
How often do you check your patient's for WSLs ?	Every visit: 51% Every 3months: 12%	Every visit: 60% Every 3months: 8%	Every visit: 52% Every 3months: 9%	0.911

	Every 6 months: 15% Only at the end of orthodontic treatment: 22%	Every 6 months: 12% Only at the end of orthodontic treatment: 20%	Every 6 months: 17% Only at the end of orthodontic treatment: 22%	
Do you prescribe fluoride products to your patients during their treatment?	Yes: 61%	Yes: 56%	Yes: 43%	0.339
Have you heard about tooth mousse and tooth mousse plus ?	Yes: 46%	Yes: 40%	Yes: 43%	0.880
Do you know the indications of using Casein-phosphopeptide amorphous calcium phosphate (CPP- ACP)	Yes: 41%	Yes: 56%	Yes: 48%	0.516
Do you think CPP-ACP is an effective agent in white spot lesion prevention?	Yes: 56%	Yes: 52%	Yes: 39%	0.422
Have you recommended CPP-ACP products to your patients ?	Yes: 34%	Yes: 24%	Yes: 48%	0.222
What is your management of white spot lesions ?	Referral to general practitioners: 27% Home care prescription: 15% Professional fluoride therapy: 46% Using CPP-ACP: 12%	Referral to general practitioners: 56% Home care prescription: 28% Professional fluoride therapy: 8% Using CPP-ACP: 8%	Referral to general practitioners: 43% Home care prescription: 22% Professional fluoride therapy: 9% Using CPP-ACP: 26%	0.002

We also compared the results on the basis of years of experience of the participants. It is observed that majority prefer brackets bonded with resin composite. Patient's teeth for dental caries and the presence of white spot lesions (WSLs) are examined at the beginning of the orthodontic treatment. Also many in all the groups have not recommended CPP-ACP products to their patients and use CPP-ACP as a management of WSL.

DISCUSSION

White spot lesion (WSL) is a common iatrogenic effect seen in patients undergoing orthodontic treatment with

Fixed appliance

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White Spot Lesion (WSL) is a common iatrogenic effect seen in patients undergoing orthodontic treatment with fixed appliances. The presence of clinically detectable, localized areas of enamel demineralization, observed as white spot lesions of different opacity, is a sign that the caries process has begun. Dental caries results in the dissolution of apatite crystals and the loss of calcium, phosphate and other ions, which eventually leads to demineralization of the tooth substrate. We aimed to determine how familiar Saudi orthodontics masters residents are of WSL and their knowledge of CPP-ACP as the agent that can be used for treatment.

From the results it can be observed that more than 50% are of the opinion that CPP-ACP is an effective agent in white spot lesion prevention. However the results also show that a large majority have also not recommended the CPP-ACP products to their patients and have also not used CPP-ACP as the management of WSLs.

There is a need to improve the information level of the patients about CPP-ACP products and its usefulness to prevent WSLs.

CONCLUSIONS

Within the limitations of this study, we have found the following:

- Majority of the orthodontists prefer brackets bonded with resin composite
- Female orthodontists showed better attitude towards CPP-ACP as an effective agent in white spot lesion prevention.
- There was not distinct relationship between years of experience and attitude or knowledge towards use and recommendation of CPP-ACP as an agent in white spot lesion prevention.

Recommendations

- This study is to be continued with an increased sample number to include more regions of KSA and orthodontists with more variant years of experience.

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